

Dean L. Engelhardt et al.

Serial No.: 10/718,391

Filed: November 19, 2003

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Listing of Claims:

Claims 1-90 (Canceled).

91. (Currently Amended) An *in vitro* process for producing more than one copy of a specific nucleic acid, said products being substantially free of any primer sequences, said process comprising the steps of:

- (a) providing a nucleic acid sample containing or suspected of containing the sequence of said specific nucleic acid;
- (b) contacting said sample with a mixture comprising:
 - (i) unmodified nucleic acid precursors,
 - (ii) one or more specific chemically-modified primers each of which primer is substantially complementary to a distinct sequence of said specific nucleic acid, and
 - (iii) an effective amount of a nucleic acid producing catalyst;
- (c) allowing said mixture to react under isostatic conditions of temperature, buffer and ionic strength to produce at least one complementary copy of said specific nucleic acid; and
- (d) removing all the primer sequences portion from the product complementary copy produced in step (c) to regenerate a primer binding site on said specific nucleic acid, thereby allowing a new priming event to occur and producing more than one copy of said specific nucleic acid.

92. (Previously Presented) The process of claim 91, wherein said removing step (d) is carried out by digestion with an enzyme.

Enz-52(C2)

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93. (Previously Presented) The process of claim 92, wherein said enzyme comprises ribonuclease H.

94. (Previously Presented) The process of claim 91, wherein said specific chemically modified primers comprise ribonucleic acid, deoxyribonucleic acid, a DNA-RNA copolymer, a polymer capable of hybridizing or forming a base-specific pairing complex and initiating nucleic acid polymerization, or a combination of any of the foregoing.

95. (Previously Presented) The process of claim 91, wherein said specific chemically modified primers comprise a 3'-hydroxyl group or an isosteric configuration of heteroatoms.

96. (Previously Presented) The process of claim 95, wherein said heteroatoms comprise nitrogen or sulfur.

97. (Previously Presented) The process of claim 91, wherein said specific chemically modified primers comprise nucleoside triphosphatase, nucleoside triphosphate analogs, or a combination thereof, wherein at least one of said nucleoside triphosphates or analogs are modified on the sugar, phosphate or base.

98. (Previously Presented) The process of claim 91, wherein said specific chemically modified primers further comprise from about 1 to about 200 noncomplementary nucleotide or nucleotide analogs.

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99. (Currently Amended) An *in vitro* process for producing more than one copy of a specific nucleic acid, said products being free of any primer sequences, said process comprising the steps of:

- (a) providing a nucleic acid sample containing or suspected of containing the sequence of said specific nucleic acid;
- (b) contacting said sample with a mixture comprising:
 - (i) unmodified nucleic acid precursors,
 - (ii) one or more specific unmodified primers each of which primer comprises at least one non-complementary sequence to a distinct sequence of said specific nucleic acid, such that upon hybridization to said specific nucleic acid at least one loop structure is formed from a segment of said primer or primers, and
 - (iii) an effective amount of a nucleic acid producing catalyst;
- (c) allowing said mixture to react under isostatic conditions of temperature, buffer and ionic strength, thereby producing at least one complementary copy of said specific nucleic acid; and
- (d) removing primer sequences the loop structure or structures from the product complementary copy produced in step (c) to regenerate a primer binding site on said specific nucleic acid, to allow a previously presented priming event to occur and produce more than one copy of said specific nucleic acid.

100. (Previously Presented) The process of claim 99, wherein said removing step (d) is carried out by digestion with an enzyme.

101. (Previously Presented) The process of claim 100, wherein said enzyme comprises ribonuclease H.

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102. (Previously Presented) The process of claim 99, wherein said specific unmodified primers comprise ribonucleic acid, deoxyribonucleic acid, a DNA-RNA copolymer, a polymer capable of hybridizing or forming a base-specific pairing complex and initiating nucleic acid polymerization, or a combination of any of the foregoing.

103. (Previously Presented) The process of claim 99, wherein said specific unmodified primers further comprise from about 1 to about 200 noncomplementary nucleotide or nucleotide analogs.

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